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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,920	06/12/2006	Kun'ichi Miyazawa	2006_0528A	5546

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EXAMINER	
QIAN, YUN	

ART UNIT	PAPER NUMBER
1793	

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06/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/574,920	MIYAZAWA ET AL.	
	Examiner	Art Unit	
	YUN QIAN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *2,4 and 6-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,4 and 6-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 2, 4 and 6-9 remain for examination. Claims 2 and 7 are amended. Claims 1, 3 and 5 are canceled.

Previous Grounds of Rejection

Applicant's Terminal Disclaimer filed on 3/16/2009 is acknowledged and an approval is pending. The non-statutory obviousness-type Double Patenting rejection with respect to claims 2-4 and 6-9 stands and will be withdrawn should the terminal disclaimer be approved.

In light of the amendment, the rejection under 35 U.S.C. 102 (b) as being anticipated by Miyazawa et al (US 2002/0192143) with respect to claim **2** (the Examiner thanks Mr. Freistein to point out a typographical error as "claim **1**" in the office action mailed on 9/16/2008) has been withdrawn.

The certified English translation copy of Foreign Prior Application submitted by Applicants overcomes the rejections under 35 U.S.C. 102 (e) as being anticipated by Mashino et al. (US 2004/0208816) with respect to claims 6-9, and under 35 U.S.C.103 (a) as being unpatentable over Miyazawa et al (US 2002/0192143) in view of Mashino et al (US 2004/0208816) with claims 1-4.

New Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 4 and 6-9 are rejected under 35 U.S.C.103 (a) as being unpatentable over Miyazawa et al (US 2002/0192143) in view of Beck et al. (Russian Chemical Bulletin, Vol. 45, No. 8, 2129-2130 (1996)), further in view of Miyazawa, Masuno and Suga (Electron Microscopy, June, 2003, Vol. 38, Supplement 1, p 160).

Miyazawa '143 discloses a method of making a fine carbon wire needle crystal of fullerene by adding a solution of iodine/isopropyl alcohol to a solution of C_{60} in toluene ([0262]-[0266] and claim 1).

As evidenced by Beck et al in the publication of Russian Chemical Bulletin (Vol. 45, No. 8, 2129-2130(1996)), fullerene C_{60} forms a weak molecular complex with iodine. Its stability constant is <0.1 L^{-1} mol^{-1} (Abstract). Therefore, the fullerene C_{60} taught by Miyazawa '143 compose a mixture of fullerene derivative (C_{60} complex with iodine) and C_{60} fullerene as the instant claim 1.

However, Miyazawa '143 does not specifically teach the fullerene derivative as per applicant claim 1.

Miyazawa, Masuno and Suga, however, disclose a similar derivitizing process to make single crystal fullerene nano-whiskers of C_{60} malonic acid diethyl ester derivate (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make fullerene derivatives, such as single crystal fullerene nano-whiskers of C_{60} malonic acid diethyl ester derivate, motivated by the fact that the resulting fullerene derivatives have smooth surfaces and conduct high resolution (abstract).

Regarding claim 4, as discussed above, the fullerene derivative taught by Miyazawa '143 is a needle single crystal (applicant's acicular) as the recited claim 4 (claims 1-4).

Regarding claims 6-7, Miyazawa '143 teaches a production process for making fullerene and fullerene derivative comprising steps of (1) putting together

a solution containing the fullerene dissolved in a first solvent with a second solvent having less solvency for the fullerene than the first solvent; (2) forming a liquid-liquid interface between the solution and the second solvent; (3) depositing a fine carbon wire at the liquid-liquid (claims 8-19). It meets the recited claimed limitations.

Regarding claim 8, the first solvent taught by Miyazawa et al. is a hydrocarbon solvent including toluene etc. as per applicant claim 8 (claim 12).

Regarding claim 9, the second solvent taught by Miyazawa et al. is an alcohol solvent such as butyl alcohol as per applicant claim 9 (claims 14 and 15).

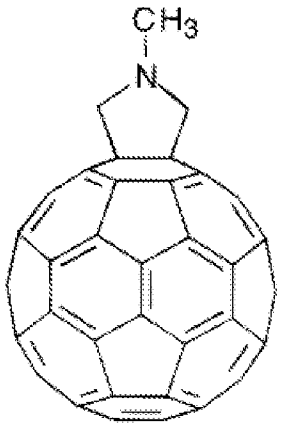
Claims 2, 4 and 6-9 are rejected under 35 U.S.C.103 (a) as being unpatentable over Miyazawa et al (US 2002/0192143) Beck et al. (Russian Chemical Bulletin, Vol. 45, No. 8, 2129-2130 (1996)), further in view of Guldi et al. (Langmuir 2000, 16, 1311-1318)

Miyazawa '143 discloses a method of making a fine carbon wire needle crystal of fullerene by adding a solution of iodine/isopropyl alcohol to a solution of C_{60} in toluene ([0262]-[0266] and claim 1).

As evidenced by Beck et al in the publication of Russian Chemical Bulletin (Vol. 45, No. 8, 2129-2130(1996)), fullerene C_{60} forms a weak molecular complex with iodine. Its stability constant is <0.1 L^{-1} mol^{-1} (Abstract). Therefore, the fullerene C_{60} taught by Miyazawa '143 compose a mixture of fullerene derivative (C_{60} complex with iodine) and C_{60} fullerene as the instant claim 1.

However, Miyazawa ‘143 does not specifically teach the fullerene **derivative** as per applicant claim 2.

Guldi et al. teaches fullerene derivatives such as N-methodfulleropyrrolidine as shown below (page 1312, Chart 1, and Experiment Section):



It would have been obvious to one of ordinary skill in the art at the time the invention was made to make fullerene derivatives, such as single crystal fullerene nano-whiskers of C_{60} malonic acid diethyl ester derivate, motivated by the fact that the resulting fullerene derivatives taught have smooth surfaces and conduct high resolution ([0015]-[0016]).

Regarding claim 4, as discussed above, the fullerene derivative taught by Miyazawa ‘143 is a needle single crystal (applicant’s acicular) as the recited claim 4 (claims 1-4).

Regarding claims 6-7, Miyazawa et al. teaches a production process for making fullerene and derivative comprising steps of (1) putting together a solution containing the fullerene dissolved in a first solvent with a second solvent

having less solvency for the fullerene than the first solvent; (2) forming a liquid-liquid interface between the solution and the second solvent; (3) depositing a fine carbon wire at the liquid-liquid (claims 8-19). It meets the recited claim limitations.

Regarding claim 8, the first solvent taught by Miyazawa et al. is a hydrocarbon solvent including toluene etc. as per applicant claim 8 (claim 12).

Regarding claim 9, the second solvent taught by Miyazawa et al. is an alcohol solvent such as butyl alcohol as per applicant claim 9 (claims 14 and 15).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUN QIAN whose telephone number is (571)270-5834. The examiner can normally be reached on Monday-Thursday, 10:00am -4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

/YUN QIAN/
Examiner, Art Unit 1793